electrodes were spotted with a solution containing DNA 1 (SEQ ID NO:1) (5'-ACCATGGACACAGAT$(CH_2)_{16}$SH-3'). 4 electrodes were spotted with a solution containing DNA 2 (SEQ ID NO: 2) (5'TCATTGATGGTCTCTTTTAACA($(CH_2)_{16}$SH-3'). 4 electrodes were spotted with DNA 3 (SEQ ID NO: 3) (5'CACAGTGGGGGGACATCAAGCAGCCATGCAAA$(CH_2)_{16}$SH-3'). 3 electrodes were spotted with DNA 4 (SEQ ID NO: 4) (5'-TGTGCAGTTGACGTGGAT$(CH_2)_{16}$SH-3'). The deposition solution was allowed to incubate at room temperature for 5 minutes and then the drop was removed by rinsing in a Milli-Q water bath. The boards were immersed in a 45°C bath of M44 in acetonitrile. After 30 minutes, the boards were removed and immersed in an acetonitrile bath for 30 seconds followed by a milli-Q water bath for 30 seconds. The boards were dried under a stream of nitrogen and stored in foiled-lined bags flushed with nitrogen until use.. –

A' concl'd

Please replace the second paragraph begining on page 122, with the following rewritten paragraph:

– Hybridization and Measurement

The modified boards were removed from the foil-lined bags and fitted with an injection molded sample chamber (cartridge). The chamber was adhered to the board using double-sided sticky tape and had a total volume of 250 microliters. A hybridization solution was prepared. The solution contains 10 nM DNA target (SEQ ID NO:5) (5'-TGTGCAGTTGACGTGGATTGTTAAAAGAGACCAT CAATGAGGAAGCTGCAGAATGGGATAGAGTCATCCAGT-3' (D-998), 30 nM signaling probe (D-1055) and (SEQ ID NO: 6) 10 nm 5'-TCTACAG(N6)C(N6)ATCTGTG TCCATGGT-3' (N6 is shown in Figure 1D of PCTUS99/01705; it comprises a ferrocene connected by a 4 carbon chain to the 2' oxygen of the ribose of a nucleoside). The signalling probe is as follows:

A2

(SEQ ID NO: 7) 5'-$(C23)_4$-N87-N87-N87-N87-ATC CAC GTC AAC TGC ACA-3' (D- 1055)

| | | |
C23 C23 C23 C23
C23 C23 C23 C23
C23 C23 C23 C23
C23 C23 C23 C23

N87 is a branch point comprising a ring structure. C23 is shown in Figure 1F of PCTUS99/01705.

In a solution containing 25% Qiagen lysis buffer AL, 455 mM $NaClO_4$, 195 mM NaCl, 1.0 mM mercaptohexanol and 10% fetal calf serum. 250 microliters of hybrid solution was injected into the cartridge and allowed to hybridize for 12 hours. After 12 hours, the hybridized chip was plugged into a homemade transconductance amplifier with switching circuitry. The transconductance amplifier was equipped with summing circuitry that combines a DC ramp from the computer DAQ card and an AC sine wave from the lock-in amplifier (SR830 Stanford Instruments). Each electrode was scanned sequentially and the data was saved and manipulated using a homemade program designed using Labview (National Instruments). The chip was scanned at between -100 mV and 500 mV (pseudo Ag/Ag/Cl reference electrode) DC with a 25 mV (50 mV peak to